

Appl. No. 10/649,465
Amdt. dated December 20, 2004
Reply to Office Action of November 17, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (canceled)

Claim 2 (currently amended): A gripping shaft [~~as recited in claim 1, wherein:~~] having an elongated cylindrical body with two, opposite end portions, said end portions defining a shaft longitudinal axis of the shaft, said shaft having an intermediate body portion between the opposite end portions, comprising:

a generally cylindrical light weight tube having an internal wall, an external wall, and two opposite ends joining the shaft end portions, said opposite ends defining a tube longitudinal axis, said tube being made from a material having resistance to torsional deflection and bending;

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a plurality of elongated, parallel, longitudinal rails
radially attached to the tube external wall and
forming, in conjunction with said tube, the shaft
intermediate body portion, said rails lying in
longitudinal planes parallel to the tube and shaft
longitudinal axes, said rails being equally spaced
about the tube external wall, said individual rails
assembled circumferentially creating a cylindrical
profile termed a gripping shaft outer diameter,
each said rail containing a plurality of gripping
elements, sliding strips and rotational balance
correction weights;

a protective end external sleeve forming each said shaft
end portion and positioned about and joined to the
tube external wall, said protective end external
sleeve having an inner surface and an outer
surface, said protective end external sleeve being
made from a material having a wear resistance,
impact and shock resistance, and dimensional
stability;

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an inner sleeve having an inner surface and an outer surface, positioned within and joined to the tube internal wall beginning approximately at the junction between said shaft intermediate body portion and shaft end portion and extending toward the shaft end portion a predetermined distance;

wherein each said longitudinal rail has an inner surface and an outer surface, said rail inner surface matching tangentially the tube external wall, said rail outer surface having two longitudinal channels, a first channel and a second channel, said second channel having a subchannel formed therein, said subchannel providing means for holding and positioning weights for balancing the gripping shaft, said second channel providing means for holding sliding strips which protrude above the rail outer surface, said first channel containing a gripping element comprised of:

an elongated expandable pneumatic bladder;

two elongated, protective polymer strips
placed under and over the bladder;

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an elongated rubber gripping element placed
over one of said polymer strips adjacent
the rail outer surface.

Claim 3 (currently amended). A gripping shaft as recited in
claim 2, wherein:

each protective end external sleeve has a plurality of
channels formed therein corresponding to the rail
first ~~[channel]~~ channels, said gripping elements
continuing through the protective end channels and
terminating near to the gripping shaft end
portions, said bladder having an end terminating in
a valve assembly interconnected to an air manifold.

Claim 4 (original): A gripping shaft as recited in claim 3,
wherein:

said tube is made from a material dissimilar to said
rails, protective end external sleeves and inner
sleeve.

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Claim 5 (currently amended): A gripping shaft as recited in
claim 4, wherein:

said tube is made of a carbon [~~finer~~] fiber material.

Claim 6 (original): A gripping shaft as recited in claim 5,
wherein:

said rails are made from aluminum.

Claim 7 (original): A gripping shaft as recited in claim 6,
wherein:

said inner sleeve and protective end external sleeves
are made from steel.

Claim 8 (original): A gripping shaft as recited in claim 7,
wherein:

said sliding strips are made from an ultra-high
molecular weight polymer.

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Claim 9 (original): A gripping shaft as recited in claim 8,
wherein:

the rails are attached to the tube utilizing a threaded
fastener connection with slotted holes in the
rails.

Claim 10 (original): A gripping shaft as recited in claim 9,
wherein:

said first channel, second channel and subchannel each
have an interlocking cross section.

Claim 11 (original): A gripping shaft as recited in claim 10,
wherein:

said weights are comprised of flat bar stock.